

In The Claims:

Please cancel claims 2-3, 5, 7-8, 11-22, 32-40, 42-49 and 51.

Claim 1. (Newly Amended): A method for increasing the abundance of germline stem cells of *Drosophila in vivo* comprising:

- (a) providing a population comprising germline stem cells in a female host transgenic *Drosophila*, wherein the transgenic *Drosophila* ectopically expresses Dpp wherein said ectopic expression of Dpp is in germline cells using hs70-GAL4 and UAS-dpp; and
- (b) subjecting the germaria of the female host transgenic *Drosophila* to heat shock, wherein the heat shock stimulation increases the abundance of germline stem cells as compared to a population wherein the germaria of the female host transgenic *Drosophila* was not subjected to heat shock.

Claims 2-3. (Newly Canceled):

Claim 4 (Newly Amended): A method according to Claim 1, wherein said germline stem cells are from an ovary.

Claim 5. (Newly Canceled):

Claim 6 (Original): A method according to Claim 1 further comprising obtaining said germline stem cells from an embryo.

Claims 7-8. (Newly Canceled).

Claims 9-10. (Previously Canceled).

Claims 11-22. (Newly Canceled):

Claim 23. (Original): A method according to Claim 1 further comprising maintaining at least one of said germline stem cells in a pluripotent state.

Claim 24. (Original): A method according to Claim 1 further comprising maintaining at least one of said germline stem cells in a totipotent state.

Claim 25. (Previously Amended): A method according to Claim 1 further comprising transferring at least one of said stimulated germ line stem cells into a second host *Drosophila*.

Claim 26. (Previously Amended): A method according to Claim 25, wherein at least one of said transferred germline stem cells is capable of contributing to two or more differentiated cell lineages of said second host *Drosophila*.

Claim 27. (Previously Amended). A method according to Claim 25, wherein at least one of said transferred germline stem cells contributes to a germline cell lineage of said second *Drosophila*.

Claim 28. (Original): A method according to Claim 1 further comprising mutating at least one gene of said germline stem cell's genome.

Claim 29. (Original): A method according to Claim 1 further comprising introducing one or more polynucleotides into said germline steam cell's genome.

Claim 30. (Original): A method according to Claim 1 further comprising integrating a polynucleotide by homologous recombination at a targeted genetic locus of said germline stem cell.

Claim 31. (Original): A method according to Claim 1 further comprising targeting at least one gene of said germline stem cell for homologous recombination , selecting at least one germline stem cell which has undergone homologous recombination of said gene, and

transferring said homologously recombined germline stem cells into another *Drosophila* such that said targeted gene is genetically transmitted through said another *Drosophila*'s germline.

Claims 32-40. (Newly Canceled).

Claim 41. (Original): A method according to Claim 1, further comprising isolating said increased abundance of germline stem cells and culturing said germline stem cells *in vitro*.

Claims 42-49. (Newly Canceled):

Claim 50. (Previously Canceled).

Claim 51. (Newly Canceled).